

## PATENT SPECIFICATION



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## COMPLETE SPECIFICATION

## Improvements in or relating to Rubber Gas Masks

We, INTERNATIONAL LATEX PROCESSES LIMITED, of 10, Lefebvre Street, St. Peter Port, Guernsey, Channel Islands, a Company incorporated under the Laws of Guernsey (Assignees of SOCIETÀ ITALIANA PIRELLI ANONIMA), a body Corporate organised under the Laws of Italy of 21, Via Fabio Filzi, Milan, Italy), do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention is concerned with improvements in rubber gas masks produced directly from aqueous dispersions of rubber, for example as disclosed in French Specification No. 746,244, according to which gas masks can be made from natural or artificial aqueous dispersions of rubber by known dipping processes. Suitable processes are described in British Specifications Nos. 233,458, 234,608 and 292,964.

The object of the present invention is to provide a more efficient gas mask of this type by modifying the manner of formation and construction of any one or more valves thereof.

According to the present invention a gas mask is produced by direct deposition from an aqueous dispersion of rubber and is provided with one or more non-return valves of which movable rubber portions are integral with the rubber of the mask.

The aforesaid valve may comprise a tubular projection of rubber with an enlarged end ending in a cap or flap of rubber having one or more perforations, the under surface of said cap or flap abutting closely against a disc fitted into the enlarged portion of the tube, the disc having one or more perforations placed so as not to correspond with the perforations in the rubber cap or flap. Preferably the disc consists of metal.

Alternatively, the aforesaid valve can be formed at any given spot in the mask by dividing the thickness of the rubber wall at that spot into two separable perforated layers, the perforations in the outer layer not corresponding with the perforations in the inner layer. Preferably

a perforated disc is positioned between the two layers so that the perforations in the disc correspond with at least one of the perforations in the inner layer and do not correspond with the perforations in the outer layer.

The gas masks according to the invention are found to give long service, not to require any special precautions, and to be specially suitable for intermittent use over short periods.

The valves communicate outwardly preferably by means of an opening, for example a diametrical slit cut on their outer surface, this slit being closed inwardly by means of a metallic disc provided with one or more openings, having the shape, for example, of a circular segment, which do not correspond with the openings of the outer surface of the valve. The disc is maintained in its position by forcing it between the cap of the projection of the valve and the restricted part of the same or by forcing it between the bisected thickness of the walls of the mask, the disc being then kept therein by the resiliency of the material.

The valves may be on any appropriate parts of the gas mask. A mask may be provided with valves of various types. The metallic disc may be of stainless steel or of light alloys, and have a circular or elliptical shape or any other desired shape. The disc, if necessary, may be of any suitable rigid material, such as wood, synthetic resins, hard rubber, etc. The shape, the number and the sizes of the openings provided on the various parts of the mask may be varied, and they may be produced by any known method.

Two embodiments of the invention are illustrated in the attached diagrammatic drawing, in which

Fig. 1 illustrates a side elevational view of the mask.

Fig. 2 illustrates an horizontal section through the mask on the section line A—A of Fig. 1.

Fig. 3 illustrates a sectional view of another type of valve.

The mask 1 is an all-rubber hood mask; it is provided with spectacles 2 and a

mouthpiece 3 for the connection of a filter to the mask and an exhaling valve 4. This valve 4 comprises a tubular projection of rubber on the body of the mask 1. The inner part of the mask is connected to the inner part of the valve by means of a restricted portion 6. The outward communication of the valve is ensured by means of the slit 7. In the interior of the projection 5 there is forced the metallic disc 8, provided with two openings 9 having the shape of a circular segment.

The operation of the valve is as follows:—

The exhaled air increases the pressure in the interior of the mask and this increase of pressure is transmitted through the openings 9 of the disc 8 to the outer wall of the cap or flap 5. The cap 5 is deformed by the increased pressure in the space between 9 and 7 and separates from the disc 8; the air escapes, therefore, through the slit 7 as long as the exhaling pressure is sufficiently high to deform the cap 5. When the air begins to be inhaled, the inner part of the mask is depressed, and the outer pressure closes completely the valve 4—which is already closed by its own resiliency—by compressing the outer surface of the projection 5 against the disc 8.

According to Fig. 3 the walls of the mask (not represented) are sufficiently thick to be divided into two separable layers at the point where the valve is to be constructed, forming an inner pocket 11. This embodiment is particularly suitable for gas masks made according to French specification No. 746,244. In the pocket 11 there is placed a disc 8, provided with a hole 9, for example in the centre thereof, in correspondence with the hole 10 connecting the valve with the interior of the mask. The outer surface of the pocket 11 is provided with holes 7 which are not in correspondence with the hole 9 of the disc 8. The operation of the valve is the same as in the preceding case.

The valves for gas masks as hereinbefore described are intended as exhaling valves for discharging the exhaled air into the outer atmosphere and for preventing the air from passing into the interior of

the mask, but they may be modified in order to permit the air to enter into the mask, and to prevent the discharge of air inhaled. In, for example, Fig. 3 it would be sufficient to provide a hole on the outer surface of the pocket 11 in correspondence with the central hole of the disc 8 and one or more peripheral holes on the inner surface of the pocket not in correspondence with holes 7 and 10.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A rubber gas mask produced by direct deposition from an aqueous dispersion of rubber and provided with one or more non-return valves of which movable rubber portions are integral with the rubber of the mask.

2. A rubber gas mask as claimed in Claim 1 wherein the aforesaid valve comprises a tubular projection of rubber with an enlarged end ending in a cap or flap of rubber having one or more perforations, the under surface of said cap or flap abutting closely against a disc fitted into the enlarged portion of the tube, the disc having one or more perforations placed so as not to correspond with the perforations in the rubber cap or flap.

3. A rubber gas mask as claimed in Claim 2 wherein the disc consists of metal.

4. A rubber gas mask as claimed in Claim 1 wherein the thickness of the rubber wall at any given spot is divided into two separate perforated layers, the perforations in the outer layer not corresponding with the perforations in the inner layer.

5. A rubber gas mask as claimed in Claim 4 provided with a perforated disc positioned between the two layers, the perforations in the disc corresponding with at least one of the perforations in the inner layer and not corresponding with the perforations in the outer layer.

6. A rubber gas mask substantially as described and illustrated in the accompanying diagrammatic drawings.

Dated this 31st day of May, 1938.

R. F. McKAY,

Acting for the Applicants.

[This Drawing is a reproduction of the Original on a reduced scale.]

